UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

OCT 17 2018

Sent Via Email

Shaun Moore
Corporate Vice President, Legal
Advanced Micro Devices, Inc.
M/S B100.3
7171 Southwest Pkwy
Austin, TX 78735

Re: Advanced Micro Devices, Inc. 901/902 Thompsonm Place Superfund Site
CERCLA Section 122(h)(1) Settlement Agreement for Recovery of Past Response Costs
CERCLA Docket Number 2018-16

Dear Mr. Moore:

This letter transmits a copy of the fully executed Settlement Agreement for Recovery of Past Response Costs (the "Agreement") at the Advanced Micro Devices, Inc. 901/902 Thompson Place Superfund Site located in Sunnyvale, California.

Thank you for your prompt attention to this matter. If you have any questions or need additional information about the requirements of this Agreement, please feel free to contact Melanie Morash of my staff at (415) 972-3050 or have your counsel contact Rebekah Reynolds, in the Office of Regional Counsel, at (415) 972-3916.

Sincerely,

Dana Barton
Assistant Director
Superfund Division

Enclosure

cc (via email): Morgan Gilhuly, MGilhuly@bargcoffin.com

IN THE MATTER OF:	)	SETTLEMENT AGREEMENT
Advanced Micro Devices, Inc. 901/902 Thompson Place Superfund Site, Sunnyvale, Santa Clara County, California,	)	U.S. EPA Region 9 CERCLA Docket No. 2018-16
Advanced Micro Devices, Inc., SETTLING PARTY	)	PROCEEDING UNDER SECTION 122(h)(1) OF CERCLA 42 U.S.C. § 9622(h)(1)

CERCLA SECTION 122(h)(1) SETTLEMENT AGREEMENT FOR RECOVERY OF PAST RESPONSE COSTS

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I. JURISDICTION

1. This Settlement Agreement is entered into pursuant to the authority vested in the Administrator of the U.S. Environmental Protection Agency ("EPA") by Section 122(h)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("CERCLA"), 42 U.S.C. § 9622(h)(1), which authority has been delegated to the Regional Administrators of the EPA by EPA Delegation No. 14-14-D (Cost Recovery Non-Judicial Agreements and Administrative Consent Orders) and redelegated to the director, deputy director, and branch chiefs or equivalent of the Superfund Division by EPA Region 9 Order 1200.01, R9 14-14D (May 9, 2018).

2. This Settlement Agreement is made and entered into by EPA and Advanced Micro Devices, Inc. ("AMD or "Settling Party"). The Settling Party consents to and will not contest EPA's authority to enter into this Settlement Agreement or to implement or enforce its terms.

II. BACKGROUND

3. This Settlement Agreement concerns the former Advanced Micro Devices, Inc. 901/902 Thompson Place Superfund Site ("Site") located in Sunnyvale, California. EPA alleges that the Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

4. In response to the release or threatened release of hazardous substances at or from the Site, EPA undertook response actions at the Site pursuant to Section 104 of CERCLA, 42 U.S.C. § 9604. Response actions generally included: performing a remedial investigation and preparing a Record of Decision ("ROD") in 1991 to address soil and groundwater contamination; reviewing and commenting on groundwater Focused Feasibility Study ("FFS") efforts; overseeing annual groundwater monitoring and in-situ bioremediation ("ISB") program activities; overseeing on-property vapor intrusion assessments beginning in 2013 and off-property vapor intrusion assessment and mitigation efforts beginning in 2014; and preparing Five-Year Review reports.

5. In performing response actions, EPA has incurred response costs at or in connection with the Site.

6. EPA alleges that the Settling Party is the responsible party pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

7. EPA and the Settling Party recognize that this Settlement Agreement has been negotiated in good faith and that this Settlement Agreement is entered into without the admission or adjudication of any issue of fact or law. The actions undertaken by the Settling Party in accordance with this Settlement Agreement do not constitute an admission of any liability. Settling Party does not admit, and retains the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Settlement Agreement, the validity of the facts or allegations contained in this Section.

III. PARTIES BOUND

8. This Settlement Agreement shall be binding upon EPA and upon the Settling Party and its successors and assigns. Any change in ownership or corporate or other legal status of a Settling

Party, including but not limited to, any transfer of assets or real or personal property, shall in no way alter such Settling Party's responsibilities under this Settlement Agreement. Each signatory to this Settlement Agreement certifies that he or she is authorized to enter into the terms and conditions of this Settlement Agreement and to bind legally the party represented by him or her.

IV. DEFINITIONS

9. Unless otherwise expressly provided in this Settlement Agreement, terms used in this Settlement Agreement that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meanings assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Settlement Agreement or its appendices, the following definitions shall apply:

"Affected Property" shall mean all real property at the Site and any other real property, owned or controlled by Settling Party, where EPA determines, at any time, that access or land, water, or other resource use restrictions are needed to implement response actions at the Site, including, but not limited to, the AMD 901/902 Thompson Place Superfund Site located at 875 East Arques Avenue, Sunnyvale, California and extending east to DeGuigne Drive, and the off-property area where contamination emanating from the Site has come to exist.

"AMD 901/902 Thompson Place Special Account" shall mean the special account, within the EPA Hazardous Substance Superfund, established for the Site by EPA pursuant to Section 122(b)(3) of CERCLA, 42 U.S.C. § 9622(b)(3).

"CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601-9675.

"Day" or "day" shall mean a calendar day. In computing any period of time under this Settlement Agreement, where the last day would fall on a Saturday, Sunday, or federal or State holiday, the period shall run until the close of business of the next working day.

"DOJ" shall mean the U.S. Department of Justice and its successor departments, agencies, or instrumentalities.

"Effective Date" shall mean the effective date of this Settlement Agreement as provided by Section XV.

"EPA" shall mean the United States Environmental Protection Agency and its successor departments, agencies, or instrumentalities.

"EPA Hazardous Substance Superfund" shall mean the Hazardous Substance Superfund established by the Internal Revenue Code, 26 U.S.C. § 9507.

"Interest" shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year. Rates are available online at https://www.epa.gov/superfund/superfund-interest-rates.

"National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

"Paragraph" shall mean a portion of this Settlement Agreement identified by an Arabic numeral or an upper or lower-case letter.

"Parties" shall mean EPA and the Settling Party.

"Past Response Costs" shall mean all costs, including but not limited to direct and indirect costs, that EPA or the U.S. Department of Justice on behalf of EPA has paid at or in connection with the Site from August 7, 2014 through May 31, 2018, plus accrued Interest on all such costs through such date.

"RCRA" shall mean the Solid Waste Disposal Act, 42 U.S.C. §§ 6901-6992 (also known as the Resource Conservation and Recovery Act).

"Section" shall mean a portion of this Settlement Agreement identified by a Roman numeral.

"Settlement Agreement" shall mean this Settlement Agreement and any attached appendices. In the event of conflict between this Settlement Agreement and any appendix, the Settlement Agreement shall control.

"Settling Party" shall mean AMD.

"Site" shall mean the AMD 901/902 Thompson Place Superfund Site, encompassing approximately 11 acres, located at 875 East Arques Avenue and extending east to DeGuigne Drive, located in Sunnyvale, Santa Clara County, California, and generally shown on the map included in Appendix A.

"State" shall mean the State of California.

"United States" shall mean the United States of America and each department, agency, and instrumentality of the United States, including EPA.

V. PAYMENT OF RESPONSE COSTS

10. **Payment by Settling Party for Past Response Costs.** Within 30 days after the Effective Date, Settling Party shall pay to EPA $ 48,930.92 in Past Response Costs.

11. Settling Party shall make payment to EPA by Fedwire Electronic Funds Transfer ("EFT") to:

Federal Reserve Bank of New York
ABA = 021030004
Account = 68010727
SWIFT address = FRNYUS33
33 Liberty Street
New York, NY 10045
Field Tag 4200 of the Fedwire message should read "D 68010727
Environmental Protection Agency"

Such payment shall reference Site/Spill ID Number 0982 and the EPA docket number for this action.

12. **Deposit of Payment.** The total amount to be paid pursuant to Paragraph 10 shall be deposited by EPA in the AMD Building 901/902 Special Account to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

13. **Notice of Payment.** At the time of payment, the Settling Party shall send notice that payment has been made to EPA in accordance with Section XIII (Notices and Submissions), and to the EPA Cincinnati Finance Center ("CFC") by email or by regular mail at:

EPA CFC by email:	cinwd_acctsreceivable@epa.gov
EPA CFC by regular mail:	EPA Cincinnati Finance Center 26 W. Martin Luther King Drive Cincinnati, Ohio 45268

Such notice shall reference Site/Spill ID Number 0982 and the EPA docket number for this action.

VI. FAILURE TO COMPLY WITH SETTLEMENT AGREEMENT

14. **Interest on Late Payments.** If the Settling Party fails to make any payment required by Paragraph 10 (Payment by Settling Party for Past Response Costs) by the required due date, Interest shall continue to accrue on the unpaid balance through the date of payment.

15. **Stipulated Penalty**

(a) If any amounts due to EPA under Paragraph 10 (Payment by Settling Party for Past Response Costs) are not paid by the required date, the Settling Party shall be in violation of this Settlement Agreement and shall pay to EPA, as a stipulated penalty, in addition to the Interest required by Paragraph 14 (Interest on Late Payments), $100 per violation per day that such payment is late.

(b) Stipulated penalties are due and payable within 30 days after the date of demand for payment of the penalties by EPA. The Settling Party shall identify all payments to EPA under this Paragraph as "stipulated penalties," shall reference Site/Spill ID Number 0982 and the EPA docket number for this action, and shall make payment by Fedwire Electronic Funds Transfer (EFT) to:

Federal Reserve Bank of New York
ABA = 021030004
Account = 68010727
SWIFT address = FRNYUS33
33 Liberty Street
New York, NY 10045
Field Tag 4200 of the Fedwire message should read "D 68010727 Environmental Protection Agency"

(c) At the time of payment, the Settling Party shall send notice that payment has been made as provided in Paragraph 13 (Notice of Payment).

(d) Penalties shall accrue as provided in this Paragraph regardless of whether EPA has notified the Settling Party of the violation or made a demand for payment, but need only be paid upon demand. All penalties shall begin to accrue on the day after payment is due and shall continue to accrue through the date of payment. Nothing in this Settlement Agreement shall prevent the simultaneous accrual of separate penalties for separate violations of this Settlement Agreement.

16. In addition to the Interest and stipulated penalty payments required by this Section and any other remedies or sanctions available to EPA by virtue of Settling Party's failure to comply with the requirements of this Settlement Agreement, if the Settling Party fails or refuses to comply with the requirements of this Settlement Agreement, it shall be subject to enforcement action pursuant to Section 122(h)(3) of CERCLA, 42 U.S.C. § 9622(h)(3). If the United States, on behalf of EPA, brings an action to enforce this Settlement Agreement, the Settling Party shall reimburse the United States for all costs of such action, including but not limited to costs of attorney time.

17. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive payment of any portion of the stipulated penalties that have accrued pursuant to this Settlement Agreement. Payment of stipulated penalties shall not excuse the Settling Party from payment as required by Section V (Payment of Response Costs) or from performance of any other requirements of this Settlement Agreement.

VII. COVENANTS BY EPA

18. **Covenants for Settling Party by EPA.** Except as specifically provided in Section VIII (Reservations of Rights by EPA), EPA covenants not to sue or take administrative action against the Settling Party pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), to recover Past Response Costs. These covenants shall take effect upon the Effective Date. These covenants are conditioned upon the satisfactory performance by the Settling Party of its obligations under this Settlement Agreement. These covenants extend only to the Settling Party and do not extend to any other person.

VIII. RESERVATIONS OF RIGHTS BY EPA

19. EPA reserves, and this Settlement Agreement is without prejudice to, all rights against the Settling Party with respect to all matters not expressly included within Paragraph 18 (Covenants for Settling Party by EPA). Notwithstanding any other provision of this Settlement Agreement,

EPA reserves, and this Settlement Agreement is without prejudice to, all rights against Settling Parties with respect to:

(a) liability for failure of the Settling Party to meet a requirement of this Settlement Agreement;

(b) liability for costs incurred or to be incurred by the United States that are not within the definition of Past Response Costs;

(c) liability for injunctive relief or administrative order enforcement under Section 106 of CERCLA, 42 U.S.C. § 9606;

(d) criminal liability; and

(e) liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments.

20. Nothing in this Settlement Agreement is intended to be nor shall it be construed as a release, covenant not to sue, or compromise of any claim or cause of action, administrative or judicial, civil or criminal, past or future, in law or in equity, that the United States may have against any person, firm, corporation or other entity not a signatory to this Settlement Agreement.

IX. COVENANTS BY SETTLING PARTY

21. **Covenants by Settling Party**. The Settling Party covenants not to sue and agrees not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to Past Response Costs and this Settlement Agreement, including but not limited to:

(a) any direct or indirect claim for reimbursement from the EPA Hazardous Substance Superfund based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;

(b) any claims arising out of the response actions at the Site for which the Past Response Costs were incurred, including any claim under the United States Constitution, the Constitution of the State of California, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, or at common law; and

(c) any claim pursuant to Section 107 or 113 of CERCLA, 42 U.S.C. § 9607 or 9613, Section 7002(a) of RCRA, 42 U.S.C. § 6972(a), or state law for Past Response Costs.

22. Nothing in this Settlement Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

X. EFFECT OF SETTLEMENT/CONTRIBUTION

23. Nothing in this Settlement Agreement shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this Settlement Agreement. Except as provided in Section IX (Covenants by Settling Party), each of the Parties expressly reserves any and all rights (including, but not limited to, pursuant to Section 113 of CERCLA, 42 U.S.C. § 9613), defenses, claims, demands, and causes of action that it may have with respect to any matter, transaction, or

occurrence relating in any way to the Site against any person not a Party hereto. Nothing in this Settlement Agreement diminishes the right of the United States, pursuant to Section 113(f)(2) and (3) of CERCLA, 42 U.S.C. § 9613 (f)(2)-(3), to pursue any such persons to obtain additional response costs or response action and to enter into settlements that give rise to contribution protection pursuant to Section 113(f)(2).

24. The Parties agree that this Settlement Agreement constitutes an administrative settlement pursuant to which the Settling Party has, as of the Effective Date, resolved liability to the United States within the meaning of Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), and is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, or as may be otherwise provided by law, for the "matters addressed" in this Settlement Agreement. The "matters addressed" in this Settlement Agreement are Past Response Costs.

25. The Parties further agree that this Settlement Agreement constitutes an administrative settlement pursuant to which the Settling Party has, as of the Effective Date, resolved liability to the United States within the meaning of Section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B).

26. The Settling Party shall, with respect to any suit or claim brought by it for matters related to this Settlement Agreement, notify EPA in writing no later than 60 days prior to the initiation of such suit or claim. The Settling Party also shall, with respect to any suit or claim brought against it for matters related to this Settlement Agreement, notify EPA in writing within 10 days after service of the complaint or claim upon it. In addition, The Settling Party shall notify EPA within 10 days after service or receipt of any Motion for Summary Judgment and within 10 days after receipt of any order from a court setting a case for trial, for matters related to this Settlement Agreement.

27. In any subsequent administrative or judicial proceeding initiated by EPA, or by the United States on behalf of EPA, for injunctive relief, recovery of response costs, or other relief relating to the Site, the Settling Party shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, *res judicata*, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised in the subsequent proceeding were or should have been brought in the instant case; provided, however, that nothing in this Paragraph affects the enforceability of the Covenants by EPA set forth in Section VII.

28. Effective upon signature of this Settlement Agreement by the Settling Party, the Settling Party agrees that the time period commencing on the date of its signature and ending on the date EPA receives from the Settling Party the payment(s) required by Section V (Payment of Response Costs) and, if any, Section VI (Failure to Comply with Settlement Agreement) shall not be included in computing the running of any statute of limitations potentially applicable to any action brought by the United States related to the "matters addressed" as defined in Paragraph 24, and that, in any action brought by the United States related to the "matters addressed," the Settling Party will not assert, and may not maintain, any defense or claim based upon principles of statute of limitations, waiver, laches, estoppel, or other defense based on the passage of time during such period. If EPA gives notice to the Settling Party that it will not make this Settlement Agreement effective, the statute of limitations shall begin to run again commencing 90 days after the date such notice is sent by EPA.

XI. ACCESS TO INFORMATION

29. The Settling Party shall provide to EPA, upon request, copies of all records, reports, documents, and other information (including records, reports, documents, and other information in electronic form) (hereinafter referred to as "Records") within its possession or control or that of its contractors or agents relating to activities at the Site, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information regarding the Site.

30. **Privileged and Protected Claims**

(a) The Settling Party may assert that all or part of a Record is privileged or protected as provided under federal law, provided it complies with Paragraph 30.b, and except as provided in Paragraph 30(c)

(b) If the Settling Party asserts a claim of privilege or protection, it shall provide EPA with the following information regarding such Record: its title; its date; the name, title, affiliation (e.g., company or firm), and address of the author, each addressee, and of each recipient; a description of the Record's contents; and the privilege or protection asserted. If a claim of privilege or protection applies only to a portion of a Record, Settling Parties shall provide the Record to EPA in redacted form to mask the privileged or protected information only. The Settling Party shall retain all Records that it claims to be privileged or protected until the United States has had a reasonable opportunity to dispute the privilege or protection claim and any such dispute has been resolved in the Settling Party's favor.

(c) The Settling Party may make no claim of privilege or protection regarding:

1) any data regarding the Site, including but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, radiological, or engineering data, or the portion of any other Record that evidences conditions at or around the Site; or

2) the portion of any Record that Settling Parties are required to create or generate pursuant to this Settlement Agreement.

31. **Business Confidential Claims**. The Settling Party may assert that all or part of a Record submitted to EPA under this Section or Section XII (Retention of Records) is business confidential to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. 2.203(b). The Settling Party shall segregate and clearly identify all Records or parts thereof submitted under this Settlement Agreement for which the Settling Party asserts a business confidentiality claim. Records that the Settling Party claims to be confidential business information will be accorded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies Records when they are submitted to EPA, or if EPA has notified the Settling Party that the Records are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2 Subpart B, the public may be given access to such Records without further notice to Settling Parties.

32. Notwithstanding any provision of this Settlement Agreement, the United States retains all of its information gathering and inspection authorities and rights, including enforcement actions relating thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

XII. RETENTION OF RECORDS

33. Until 10 years after the Effective Date, the Settling Party shall preserve and retain all non-identical copies of Records now in its possession or control, or that come into its possession or control, that relate in any manner to its liability under CERCLA with respect to the Site, provided, however, that the Settling Party, if responsible as owner or operator of the Site must retain, in addition, all Records that relate to the liability of any person under CERCLA with respect to the Site. Each of the above record retention requirements shall apply regardless of any corporate retention policy to the contrary.

34. After the conclusion of the 10-year record retention period, the Settling Party shall notify EPA at least 90 days prior to the destruction of any such Records and, upon request by EPA, and except as provided in Paragraph 30 (Privileged and Protected Claims), the Settling Party shall deliver any such Records to EPA.

35. The Settling Party certifies that, to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed, or otherwise disposed of any Records (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by the United States or the State and that it has fully complied with any and all EPA and State requests for information regarding the Site pursuant to Sections 104(e) and 122(e)(3)(B) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e)(3)(B), Section 3007 of RCRA, 42 U.S.C. § 6927, and state law. If Settling Party is unable to so certify, it shall submit a modified certification that explains in detail why it is unable to certify in full with regard to all records

XIII. NOTICES AND SUBMISSIONS

36. Whenever, under the terms of this Settlement Agreement, notice is required to be given or a document is required to be sent by one Party to another, it shall be directed to the individuals at the addresses specified below, unless those individuals or their successors give notice of a change to the other Parties in writing. Except as otherwise provided, notice by email (if that option is provided below) or by regular mail in accordance with this Section satisfies any notice requirement of this Settlement Agreement regarding such Party.

As to EPA:

Melanie Morash
Remedial Project Manager
United States Environmental Protection Agency
75 Hawthorne St. (SFD-7-1)
San Francisco, CA 94105
morash.melanie@epa.gov

Rebekah Reynolds
Assistant Regional Counsel
United States Environmental Protection Agency
75 Hawthorne St.
San Francisco, CA 94105
reynolds.rebekah@epa.gov

As to Settling Party:

Shaun Moore
Corporate Vice President | Legal
Advanced Micro Devices, Inc.
7171 Southwest Parkway
Austin, Texas 78735
shaun.moore@amd.com

R. Morgan Gilhuly
Attorney for Advanced Micro Devices, Inc.
Barg Coffin Lewis & Trapp, LLP
350 California Street, 22nd Floor
San Francisco, CA 94104
mgilhuly@bargcoffin.com

XIV. INTEGRATION/APPENDICES

44. This Settlement Agreement and its appendices constitute the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Settlement Agreement. The Parties acknowledge that there are no representations, agreements, or understandings relating to the settlement other than those expressly contained in this Settlement Agreement. The following appendices are attached to and incorporated into this Settlement Agreement: Appendix A, a map of the Site; and Appendix B, a copy of the December 3, 2013 EPA letter regarding Guidelines and Supplemental Information Needed for Vapor Intrusion Evaluations at the South Bay NPL Sites.

XV. EFFECTIVE DATE

46. Settlement shall be effective one day after the Settlement is signed by the Assistant Director of EPA Region 9 Superfund Division or his/her delegate.

IT IS SO AGREED:

U.S. ENVIRONMENTAL PROTECTION AGENCY:

10/17/18
Dated

Dana Barton
Assistant Director

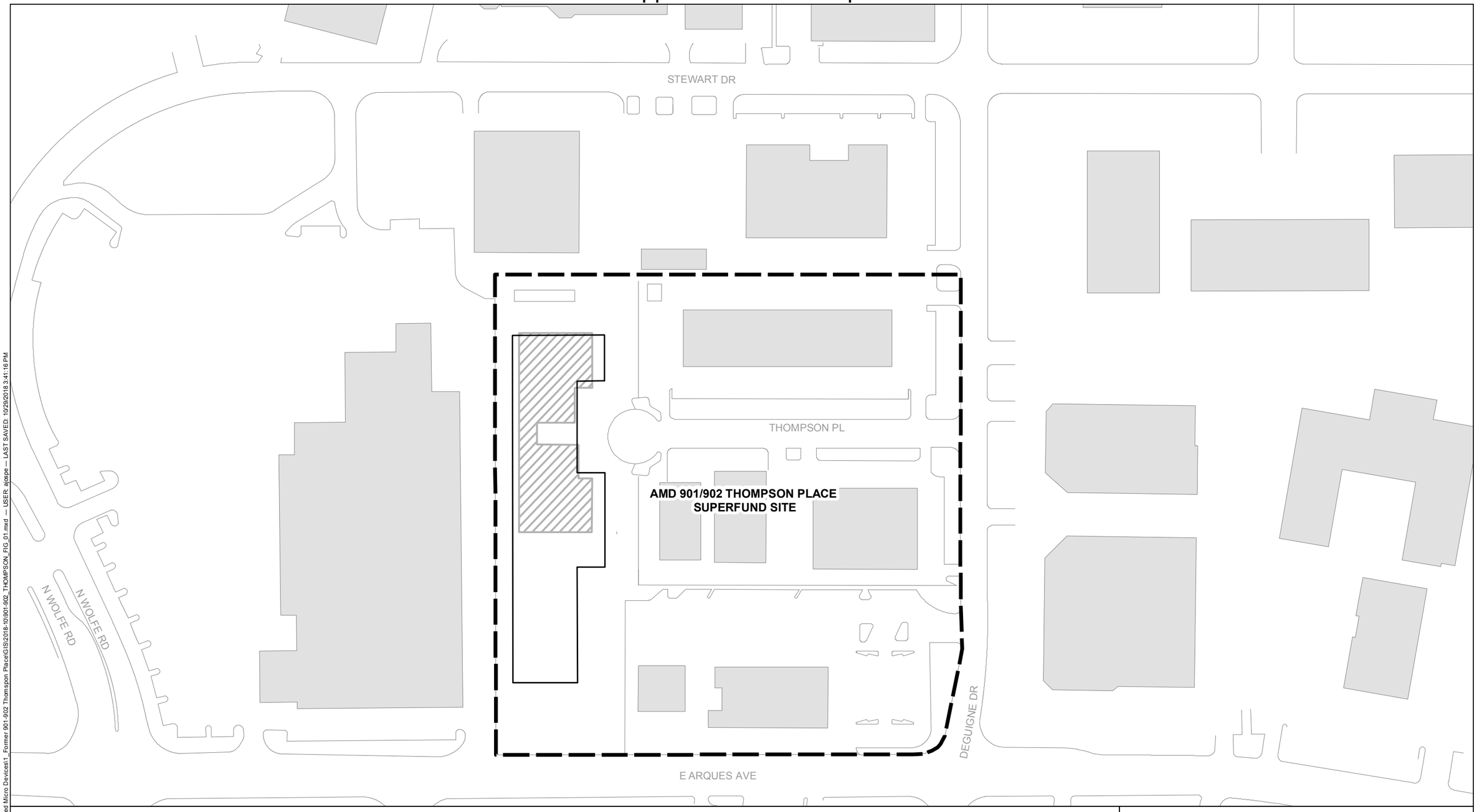
Signature Page for Settlement Agreement Regarding the
AMD 901/902 Thompson Place Superfund Site

FOR ADVANCED MICRO DEVICES, INC:

10/4/2013
Dated

Shaun Moore
Corporate Vice President, Legal
Advanced Micro Devices, Inc.
M/S B100.3
7171 Southwest Pkwy.
Austin, TX 78735

Appendix A - Site Map



LEGEND

- AMD 901/902 THOMPSON PLACE SUPERFUND SITE
- CURRENT ON-SITE BUILDING
- FORMER 901/902 THOMPSON PLACE
- OTHER BUILDING

N

0 150 300

SCALE IN FEET

HALEY ALDRICH

AMD 901/902 THOMPSON PLACE SUPERFUND SITE
SUNNYVALE, CALIFORNIA

SITE PLAN AND VICINITY

OCTOBER 2018

FIGURE 1

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 9
75 Hawthorne Street
San Francisco, CA 94105

December 3, 2013

Stephen Hill, Chief
Toxics Cleanup Division
California Regional Water Quality Control Board – SF Bay Region
1515 Clay Street #1400
Oakland, CA 94612

SUBJECT: EPA Region 9 Guidelines and Supplemental Information Needed for Vapor Intrusion Evaluations at the South Bay National Priorities List (NPL) Sites

Dear Mr. Hill:

The United States Environmental Protection Agency (EPA) Region 9 appreciates the opportunity to work with the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) in conducting vapor intrusion evaluations at the following Regional Water Board-lead National Priorities List (NPL) or Superfund sites in the South San Francisco Bay Area (South Bay Sites) where trichloroethene (TCE) or tetrachloroethene (PCE) are contaminants of potential concern:

- AMD 901/902/TRW Microwave/Phillips and Offsite Operable Unit Combined Sites in Sunnyvale
- AMD 915 DeGuigne Drive Site in Sunnyvale
- Monolithic Memories Site (also known as AMD 1165/1175 Arques Avenue Site) in Sunnyvale
- Fairchild Semiconductor Site in South San Jose
- Hewlett Packard 620-640 Page Mill Road Site in Palo Alto
- Intersil/Siemens Site in Cupertino and Sunnyvale
- National Semiconductor Site (also known as Texas Instruments Site) in Sunnyvale
- Synertek Building 1 Site in Santa Clara
- Teledyne/Spectra-Physics Sites in Mountain View

EPA recognizes and appreciates all of the vapor intrusion work activities conducted to date at these sites. Pursuant to recent discussions with EPA Region 9, the Regional Water Board, and the potentially responsible party (PRP) representatives on planned upcoming vapor intrusion work activities, EPA

Region 9 is providing this letter to outline EPA's recommended TCE interim short-term indoor air response action levels and guidelines and clarify the use of California-modified indoor air screening levels that should be applied when assessing and responding to TCE and PCE subsurface vapor intrusion into indoor air.

In addition, this letter includes, as outlined in the Attachment, additional information and specific requirements for vapor intrusion evaluations for the South Bay Sites, consistent with the "multiple-lines-of-evidence" approach in EPA's 2013 Office of Solid Waste and Emergency Response (OSWER) *External Review Draft – Final Guidance for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Sources to Indoor Air*. In reviewing the multiple lines of evidence that have been collected for the South Bay Sites, EPA Region 9 has identified data gaps that must be filled to fully evaluate the potential for vapor intrusion into buildings overlying the South Bay Sites' contamination.

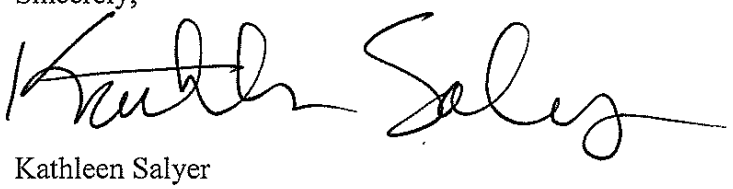
EPA Region 9 recommends that the following guidelines and supplemental information be incorporated, as appropriate, into existing and future Vapor Intrusion Evaluation Work Plans (Work Plans) for each of the South Bay Sites:

- Interim TCE Indoor Air Short-term Response Action Levels and Guidelines
- PCE Indoor Air Screening Levels
- Residential Building Sampling Approach – Multiple Rounds of Sampling including Colder Weather and Crawlspace Sampling
- Commercial Building Sampling Approach – Building Ventilation System (HVAC)-Off, HVAC-On and Pathway Sampling
- On-Property Study Area Building Sampling
- Phased Approach and Clarification of Vapor Intrusion Off-Property Study Areas to Include Buildings Overlying 5 µg/L TCE Shallow-Zone Groundwater Contamination

EPA Region 9 will continue to provide technical vapor intrusion and community involvement and outreach support for the South Bay Sites.

If you have any technical questions, please contact Melanie Morash of my staff at (415) 972-3050 or by e-mail to morash.melanie@epa.gov.

Sincerely,



Kathleen Salyer
Assistant Director, Superfund Division
California Site Cleanup Branch

Attachment: EPA Region 9 Guidelines and Supplemental Information for VI Evaluations

Attachment: EPA Region 9 Guidelines and Supplemental Information Needed for Vapor Intrusion Evaluations at the South Bay National Priorities List (NPL) Sites

EPA Region 9 recommends that the following guidelines and supplemental information be incorporated, as appropriate, into existing and future Vapor Intrusion Evaluation Work Plans (Work Plans) for each of the South Bay NPL Sites, primarily with subsurface trichloroethene (TCE) and tetrachlorethene (PCE) contamination.

The additional information and specific requirements requested are consistent with the "multiple-lines-of-evidence" approach in EPA's 2013 Office of Solid Waste and Emergency Response (OSWER) *External Review Draft – Final Guidance for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Sources to Indoor Air*.

In reviewing the multiple lines of evidence that have been collected for the South Bay Sites, EPA Region 9 has identified data gaps that must be filled in order to fully evaluate the potential for vapor intrusion into buildings overlying the subsurface contamination at each individual South Bay Site.

Item #1 – Interim TCE Indoor Air Short-term Response Action Levels and Guidelines

In September 2011, EPA published its *Toxicological Review of Trichloroethylene in Support of the Integrated Risk Information System (IRIS).* Recent findings on TCE conclude that women in the first trimester of pregnancy are one of the most sensitive populations to TCE short-term inhalation exposure due to the potential for heart malformation for the developing fetus.

EPA uses a level of concern for non-cancer effects as a ratio of the exposure concentration to a safe dose including an additional margin of safety, called a reference concentration (RfC). This ratio is defined as a Hazard Quotient and abbreviated "HQ". The IRIS assessment derived an inhalation RfC for continuous inhalation exposure to TCE, which is 2 micrograms per cubic meter (2 $\mu g/m^3$).

Because this is a developmental effect, the critical period for exposure is considered to be within an approximate 3-week period in the first trimester of pregnancy during which the heart develops. Scientific information on the exact critical period of exposure for this health impact is not currently available; however, general risk assessment guidelines for developmental effects indicate that exposures over a period as limited as 24 hours[1] may be of concern for some developmental toxicants.

In light of this RfC information, EPA Region 9 is using health protective response action levels and guidelines to address short-term inhalation exposures to TCE in indoor air from the subsurface vapor intrusion pathway. The purpose of these interim response action levels and guidelines is to be protective of one of the most sensitive and vulnerable populations, women in their first trimester of pregnancy, because of the potential for cardiac malformations to the developing fetus during this short timeframe.

These guidelines identify women of reproductive age as the sensitive population of concern, rather than only pregnant women, because some women may not be aware of their pregnancy during the first trimester.

[1] U.S. EPA. Guidelines for Developmental Toxicity Risk Assessment. U.S. Environmental Protection Agency, Risk Assessment Forum, Washington, DC, EPA/600/FR-91/001, 1991

Assessment of TCE Inhalation Vapor Intrusion Exposure and Prompt Response Actions in Residential and Commercial/Industrial Buildings: The interim TCE indoor air short-term response action levels should be included in Vapor Intrusion Evaluation Work Plans (Work Plans) for assessing and responding to inhalation exposures to TCE in residential and commercial buildings caused by subsurface vapor intrusion at the South Bay Sites.

Interim TCE Indoor Air Short-Term Response Action Levels
Residential and Commercial TCE Inhalation Exposure
from Subsurface Vapor Intrusion
South Bay NPL Sites

Exposure Scenario	***Prompt Response Action Level*** *(HQ=1)*[2]
Residential *	2 $\mu g/m^3$
Commercial/Industrial 8-hour workday	9 $\mu g/m^3$
10-hour workday (South Bay Sites) **	7 $\mu g/m^3$

* The Residential HQ=1 prompt response action level is equivalent to the inhalation reference concentration (RfC) since exposure is assumed to occur continuously over a 24-hour period.

** Commercial/Industrial prompt response action levels are calculated as the time-weighted average from the RfC - 9 $\mu g/m^3$ for an 8-hour workday; 7 $\mu g/m^3$ for a 10-hour workday. Based on input from commercial building owners and tenants, EPA Region 9 recommends use of the 10-hour workday for determining the appropriate response action levels for commercial/industrial buildings at the South Bay Sites. Time-weighted adjustments can be made as needed for workplaces with longer work schedules.

Note: These prompt response action levels are near the lower end of the Superfund Health Protective Cancer Risk Range;[3] thus, the Superfund Health Protective Risk Range for both long-term and short-term exposures is: 0.4 – 2 $\mu g/m^3$ for residential exposures and 3 – 9 $\mu g/m^3$ for 8-hour/day commercial/ industrial exposures.[4]

TCE Indoor Air Concentration > Prompt Response Action Level (HQ=1): In the event the indoor air TCE concentration related to subsurface vapor intrusion is detected above the prompt response action levels (HQ=1), then interim mitigation measures should be evaluated and implemented quickly, and their effectiveness (defined as a reduction of the TCE indoor air concentration to below HQ=1 level) confirmed promptly (e.g., all actions completed and confirmed within a few weeks).

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[2] There is a need to identify TCE exposures that exceed the HQ=1 level by a magnitude sufficient enough that a more urgent response is prudent; it is EPA Region 9 practice to take immediate action to address exposures at or above an HQ=3 level.

[3] For cancer causing chemicals, the Superfund Health Protective Risk Range encompasses the range of concentrations EPA considers to be protective, from 1 to 100 in a million increased lifetime cancer risk. The level that falls into the most protective end of the risk range – 1 in a million increased lifetime risk – is what is used as the screening level for any particular chemical. After identifying the health protective levels, EPA then compares measured values to the lowest, most health-protective, end of the range. Although levels of exposure anywhere within the range may be acceptable, EPA's goal for indoor air exposures to Superfund site-related chemicals is to keep exposures as low as reasonably possible within the Superfund Health Protective Risk Range.

[4] U.S. EPA Region 9 May 2013 Regional Screening Levels: http://www.epa.gov/region9/superfund/prg/ Accessed November 2013.

Implementation of Interim Measures to Mitigate TCE Short-term Exposure: The following interim response actions (mitigation measures) should be considered along with how quickly they can be implemented to reduce exposure to below the TCE short-term response action levels:

- Increasing building pressurization and/or ventilation mechanically with fans or the building ventilation system by increasing outdoor air intake
- Installing and operating engineered, sub-floor exposure controls (sub-slab and/or crawlspace depressurization; or in some cases a soil vapor extraction system)
- Eliminating exposure by temporary relocation, which may be indicated when immediate response actions are warranted.

The following interim measures may also be considered, but may have limited effectiveness and require additional monitoring to verify their effectiveness:

- Sealing and/or ventilating potential conduits where vapors may be entering building
- Treating indoor air (carbon filtration, air purifiers)

Item #2 – PCE Indoor Air Screening Levels

EPA acknowledges that the California-modified indoor air screening levels for PCE differ from EPA's May 2013 Regional Screening Levels (RSLs) for PCE. EPA Region 9 would like to clarify that the California EPA Office of Health Hazard Assessment's PCE toxicity value should be used for all NPL sites within California, which includes the South Bay Sites.

Work Plans and reports should be prepared or revised, as appropriate, to evaluate indoor air sampling results using the California-modified indoor air screening level of 0.4 $\mu g/m^3$ for residential exposures and 2 $\mu g/m^3$ for commercial/industrial exposures. The Superfund Health Protective Risk Range for PCE is bounded by the 10^{-6} excess cancer risk (low end) and by the non-cancer HQ=1 (high end). Specifically, the Superfund Health Protective Risk Range for PCE is 0.4 – 40 $\mu g/m^3$ for residential exposures and 2-180 $\mu g/m^3$ for commercial/ industrial exposures.

Item #3 – Residential Building Sampling Approach – Multiple Rounds of Sampling including Colder Weather and Crawlspace Sampling

Recognizing the temporal and spatial variability of indoor air and subsurface concentrations, EPA generally recommends collecting more than one round of sampling and from multiple locations. In reviewing the multiple lines of evidence that have been collected for the South Bay Sites, EPA Region 9 has identified several data gaps that must be filled in order to complete the vapor intrusion evaluations at each site. Specifically, it appears that multiple rounds of indoor air sampling have not been collected. For some sites, sampling has not been conducted during colder weather months, nor have samples been collected from crawlspaces or basements, where such are present in buildings.

Research studies[5][6][7][8] have demonstrated that daily indoor air concentrations resulting from subsurface vapor intrusion can vary by two or more orders of magnitude in residential, passively ventilated structures. These studies also indicate that the highest indoor air concentrations usually occur when outdoor air temperatures are significantly lower than indoor air temperatures. Empirical indoor air data collected at passively ventilated buildings in the San Francisco Bay Area where multiple samples were collected indicate TCE indoor air concentrations from vapor intrusion up to two-to-three times higher during the colder months.

Work Plans should be revised to incorporate multiple rounds of sampling, including sampling during colder weather months (November through February, with January generally being the coldest month in the Bay Area), to assess the potential variability of indoor air contaminant concentrations during conditions when the potential for vapor intrusion may be higher. In addition, crawlspace, basement, and pathway sampling should be included, as appropriate, as part of the vapor intrusion investigation.

Finally, EPA Region 9 supports the use of longer-term passive samplers to help assess the temporal variability of indoor air vapor intrusion-related contaminant concentrations. The longer-term sampler provides a greater duration over which to average indoor air vapor intrusion levels for the purposes of completing the vapor intrusion evaluation, however EPA Region 9 is open to discussing sampling strategies for both the passive sampler and TO-15 canister.

Item #4 – Commercial Building Sampling Approach - Building Ventilation System (HVAC)-Off, HVAC-On and Pathway Sampling

Consistent with the multiple-lines-of-evidence approach recommended by EPA guidance, ongoing vapor intrusion evaluations at certain commercial buildings associated with some of the South Bay Sites have included soil gas, sub-slab soil gas, and/or potential preferential pathway sampling (such as near bathroom floor drains and from elevator shafts or mechanical rooms), as well as indoor air sampling during normal business hours with the building's heating, ventilation, and air conditioning (HVAC) systems operating.

In reviewing these lines of evidence, EPA Region 9 has identified as a data gap the lack of HVAC-off sampling for certain commercial buildings, and recommends that pathway sampling, where such sampling has not yet been conducted, be included in the multiple-lines-of-evidence evaluation.

Because EPA needs to evaluate the potential for subsurface vapor intrusion into buildings without reliance on the indoor air ventilation system and understand the full range of possible exposure scenarios, Work Plans must be prepared or revised, as appropriate, to include indoor air sampling with the building ventilation systems turned off in addition to sampling commercial buildings under current

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[5] Schumacher, B., R. Truesdale, and C. Lutes. Fluctuation of Indoor Radon and VOC Concentrations due to Seasonal Variations. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R/12/673, 2012

[6] Schumacher, B. and J. Zimmerman, U.S. EPA ORD, C. Lutes, ARCADIS, and R. Truesdale, RTI International. Indoor Air and Soil Gas Temporal Variability Effects on Sampling Strategies: Evidence from Controlled and Uncontrolled Conditions in an Indianapolis duplex. March 18, 2013 Association for Environmental Health and Sciences Foundation Conference: https://iavi.rti.org/WorkshopsAndConferences.cfm

[7] Johnson, P. Arizona State University. Multi-Year Monitoring of a House Over a Dilute CHC Plume: Implications for Pathway Assessment using Indoor Air Sampling and Forced Under-Pressurization Tests. March 18, 2013 Association for Environmental Health and Sciences Foundation Conference: https://iavi.rti.org/WorkshopsAndConferences.cfm

[8] Holton, C., H. Luo, Y. Guo, and P. Johnson, Arizona State University, K. Gorder and E. Dettenmaier, Hill Air Force Base. Long-term and Short-term Variation of Indoor Air Concentration at a Vapor Intrusion Study Site. March 22, 2012 Association for Environmental Health and Sciences Foundation Conference: https://iavi.rti.org/WorkshopsAndConferences.cfm

building operating conditions.

For HVAC-off sampling, sampling duration should begin a minimum of 36 hours following shut-down of the building ventilation systems (no outdoor air intakes into the building) and continue while HVAC systems remain off. Because there is a greater potential for elevated indoor air contaminant concentrations while the building ventilation is turned off, adequate notice must be provided to building management and potential occupants about the testing and the schedule for when the ventilation system will be shut off.

Item #5 – On-Property Study Area Building Sampling

At certain of the South Bay Sites, indoor air sampling was originally not required at specific On-Property Study Area (or former source area) commercial buildings that were thought to have a low potential for vapor intrusion (e.g., due to the presence of a vapor intrusion mitigation system such as a sub-floor vapor barrier or where living or workspaces are located above a ventilated underground parking garage).

However, vapor intrusion sampling has shown the potential for vapor intrusion to occur at buildings with existing vapor intrusion mitigation systems (for example, where the systems were damaged during building construction or renovation activities). For buildings overlying subterranean parking garages, preferential pathways such as elevator shafts and stairwells may also increase vapor intrusion potential into occupied living spaces.

EPA Region 9 would like to clarify that all On-Property Study Area buildings should be evaluated and sampled. For building space overlying subterranean parking, potential preferential pathways into the building indoor air space, such as elevator shafts and stairwells, should be evaluated.

Work Plans should be prepared or revised, as appropriate, to include pre-sampling walk-throughs to assess building and system conditions. These building surveys should identify if there are any conditions that may prompt any additional evaluation and sampling to assess the effectiveness of the vapor intrusion engineering controls of the buildings.

Item #6 – Phased Approach and Clarification of Vapor Intrusion Off-Property Study Areas to Include Buildings Overlying 5 µg/L TCE Shallow-Zone Groundwater Contamination

EPA supports the initial agreed upon prioritization of conducting vapor intrusion evaluations at commercial and residential buildings overlying higher TCE shallow A-zone groundwater contamination (greater than 50 µg/L for residential buildings and greater than 100 µg/L for commercial buildings). For those South Bay Sites where vapor intrusion evaluations have already begun, early project planning discussions culminated in a phased approach to delineating the Vapor Intrusion Off-Property Study Area, beginning with investigations in these higher concentration areas of the subsurface groundwater plumes.

The groundwater contamination at the South Bay Sites is generally very shallow, ranging between approximately 5 feet below ground surface (bgs) to 35 feet bgs. Ongoing data collection efforts at other similar vapor intrusion sites in Region 9, as well as nationally, have shown vapor intrusion potential into buildings overlying lower groundwater TCE concentrations (less than 50 µg/L for residential buildings and less than 100 parts µg/L for commercial buildings), at levels exceeding health protective indoor air levels. Factors include, but are not limited to, location relative to source areas,

impacts due to seasonal fluctuations in groundwater levels, preferential pathways into a building and other building-specific characteristics that facilitate upward migration of subsurface vapors into interior living and work spaces.

The use of the TCE 5 µg/L groundwater concentration as defining the extent of the Vapor Intrusion Evaluation Study Area is reasonable, supported by use of EPA's vapor intrusion screening level calculator, the generic default groundwater-to-indoor air attenuation factor of 0.001 and the appropriate Henry's Law conversion, empirical data, and mathematical modeling.

Work Plans shall be prepared or revised, as appropriate, to define the Vapor Intrusion Off-Property Study Area as the area bounded by the estimated TCE shallow zone groundwater contamination area greater than 5 µg/L. A comprehensive evaluation of the multiple lines of evidence collected for each site should be used in determining the potential for vapor intrusion at particular buildings and whether additional investigation and response actions are warranted. Any proposal to exclude particular buildings from indoor air sampling must be supported by a robust, site- and building-specific multiple-lines-of-evidence analysis.

Where contaminants other than TCE drive the vapor intrusion investigation, a site-specific and contaminant-specific analysis following the multiple-lines-of-evidence approach should be used to derive a sufficiently health protective study boundary for the vapor intrusion evaluation.

EPA supports a phased multiple-lines-of-evidence approach in prioritizing vapor intrusion investigations, for example: (1) colder weather indoor air sampling event and commercial building HVAC-off and HVAC-on sampling within the original Off-Property Study Area; (2) data evaluation and identification of data gaps, with subsequent additional multiple-lines-of-evidence data collection and analysis; (3) targeted step-out's to specific commercial/residential buildings or streets overlying lower contaminant concentration contour lines; and finally (4) full step-out and building-specific evaluation to off-property vapor intrusion study boundary line, or 5 µg/L for TCE.